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In working with a disadvantaged population, such as the young adult prisoners at Draper Correctional Center, one of the first considerations in motivating them to acquire academic skills is to aid them in establishing reasonable and attainable education goals. After a meaningful goal has been accepted, the learner's specific deficiencies must be established, then remedial work must be prescribed on an individual basis. Materials must be specifically related to vocational need, which should be determined through a task analysis. Prompt and frequent feedback, such as provided in programed instruction, is an essential motivational device. A study of contingency management (proper management of reinforcers) in which a written performance contract was used showed that students had completed nearly twice as many frames in half the time and, although there was no change in pass/fail, they took more tests. (eb)

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ADULT BASIC EDUCATION FOR THE DISADVANTAGED: Procedures Used to Raise the Basic Educational Level

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This nation has recently discovered the dark subcontinent of the poor, and we are now engaged in a war upon the social and economic ingredients which breed poverty. For long years we have appreciated the uplifting power of education in its many forms, and we are now commanding this instrument for betterment to join our ranks and do battle against deprivation, which has been the constant consort of human misery the world over.

We here are all users of educational technology, and we are searching for the best ways to employ this resource in a special area--basic education--a critical requirement for the person who would be an economically self-sufficient citizen. For the many vocations require, for their mastery, proficiency in language arts and arithmetic. Basic education also permits greater flexibility for rapid training in the vocations. This flexibility will be demanded even more in the future, because the increasing complexity of our economy means the average person will be required to learn at least three different vocational skills during his lifetime.

Setting the Goals of Basic Education

I work with a disadvantaged population in a state prison (Draper Correctional Center) for young adult prisoners, and one of the first considerations, I learned, in motivating them to acquire academic skills is to aid them in establishing reasonable and attainable education goals. Sometimes it is obvious

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what the goal should be. If the student is illiterate he will first learn to read and write. For the learner who has achieved a 9th grade education, studying toward a GED certificate for high school equivalency is appropriate--and motivating for him, too. But all adults should, through a counseling effort, be guided to accept the fact that more education will be of great value in learning a trade, advancing on the job, and earning more money. To aid in preventing high school dropouts, our MDTA project has developed a short, but effective lesson entitled, "How to Make $50,000,"--the $50,000 being the difference in lifetime earning power of a graduate and a dropout.

Steps in Assessing Deficiencies

After a meaningful basic education goal has been accepted by the learner, his specific deficiencies must be established. The definition of deficiency is presented by the following formula: M - I = D, where M is mastery of the skill, I is the initial or entry skill of the learner, and D is the difference or deficiency.

M in this formula is the level of competence desired. This level is determined through a task analysis of the basic education requirements of a particular occupation. A person who aspires to be a bricklayer, for example, must attain those verbal and arithmetic skills which will enable him to comprehend related reading materials and to make certain computations.

D can be thought of as the deficiencies that a learner brings into the basic education program. It is our job to operate on these deficiencies, to close the gap between entry skills and mastery skills.

I in this formula is found by administering one or more achievement tests. When the results of these tests are analyzed, almost invariably subtest scores will register what is called a "scatter pattern," reflecting intra-individual differences. For an example of subtest scatter patterns on inmate MDTA students

who were administered the California Achievement Test at Draper Correctional Center, refer to Exhibit A.

But here you have only a general accounting of achievement in, say, math or language arts. Now, it is important that a bricklayer know how to work common fractions, and your job is to discover exactly what he does or doesn't know about fractions. Obviously, a refined assessment is called for. We are giving considerable attention to refined diagnosis at Draper, and I am prepared to show you how we go about it. We have analyzed, for example, 8 different general operations required to master fractions (refer to Exhibit B) and have developed a diagnostic test to give us an account of specific deficiencies in each area of fractions.

Prescribing a Remedial Program

Just as assessing basic educational deficiencies is an individualized process, prescribing remedial work is also a "tailor's task." The learner should not, for example, be assigned already known material. An unrefined prescription of this type elicits boredom and wastes precious time of the learner.

But most important is selecting material specifically related to vocational need. The basic educational requirements of a specific trade should be ascertained, of course, through a task analysis. Once I attended a meeting where trade union leaders of bricklayers and plumbers were present. They felt it very essential that workers in their trade should have high school diplomas. The two leaders had them, to be sure, and they were certain that all the skills they mastered in high school were very desirable for their trade and should be required. It was obvious they were substituting educational prestige and status for actual job requirements.

Now, let us return to our task of teaching fractions to a bricklayer. After the individual's deficiencies have been assessed, we prescribe a remedial program

for him which we call a "Fractions Laboratory." As stated earlier, we have developed, for this purpose, short programs for the 8 different operations required for mastery. (Refer to Exhibit B.) Lessons are so programmed that the learner can complete each of them in 10 to 20 minutes, going from zero to 100 percent competency on unit tests that he can administer to himself. From this point he proceeds to a practice phase in which he is presented problems, expressed in words, that he will almost surely meet as a bricklayer--problems of measurement, problems in estimating brick, mortar and wall surfaces. Solving these realistic problems gives the bricklayer student an appreciation of his future job and the means of solving quickly and accurately problems involving fractions.

Motivational Theory and Application

The constant theme running through this presentation--obvious or not--has been the motivation of the learner. Now, I want to treat this topic more directly. Incidentally, the more obvious motivational techniques will not be discussed here. Examples of these include supporting of the basic education program by the shop instructors, regarding students as adults and not children, showing interest in the learner, encouraging him frequently, and providing a variety of instructional techniques. Rather, I shall discuss the more technical aspects of motivational theory and suggest several applications.

First, let us define the term motivation. Simply, it is goal directed behavior--behavior that produces a desired outcome. The test of motivation, then, for the learner in basic education is productivity--as steady, as intensive, as consuming as possible.

Now, the behavior scientist tells us that motivation is a function of reinforcement; or, to state this principle in another way: The likelihood that a certain behavior will recur depends upon its consequences. Those consequences

that strengthen the preceding behavior or response are called reinforcers. We employ many specific reinforcers in an attempt to maintain good learning behavior, such as statements of interest and encouragement designed to build up the confidence of the student, and frequent indications of progress, such as "passing" test scores. We try to relate basic education to the vocational goal to which he is committed, in order to provide a generalized reinforcer to maintain learning behavior.

But, just as there are positive reinforcers we try to put into effect, negative reinforcers are at work to extinguish motivation--embarrassment, slow progress, futility and disappointment, boredom, and dislike of the student role. The task, consequently, of basic education specialists is to "accentuate the positive and eliminate the negative."

Accurate diagnosis of deficiencies and appropriate assignment of remedial work contribute to the motivation of the learner. The instructional methods also have important motivational value. We rely, for example, heavily on programmed instruction in our Draper projects because this technique has high reliability for insuring success. One of the reasons for success with P. I. is that the approach provides the learner excellent feedback of his progress--immediately and at every small step of the way. Feedback of progress, I should like to emphasize, whether through P. I., tests, or progress charts, is an essential motivational device.

Contingency management is a crucial bit of behavioral engineering derived from psychological science. Learning is contingent upon the immediate consequences that follow an act or response. And, as stated above, those consequences that are found to strengthen a response are called reinforcers. Since reinforcement is the primary source of motivation, it is extremely important to use or manage these reinforcers properly--thus "contingency management."

Contingency management is really nothing new. Good teachers have been using it for years--so have parents and everybody else. The wise parent tells Johnny that he can't look at TV until he does his homework. The wage earner has to work a week or two before he receives a reinforcing check for his labors. But sometimes we manage our contingencies in reverse fashion: We let Johnny see his favorite TV show, then beg, plead, argue or threaten him into doing his homework. While many of us do not apply contingency management in a systematic fashion, we may also be unrealistic in our choice of reinforcers. For example, we may try to introduce a reinforcer to Johnny that he hasn't asked for: "Johnny, if you do your homework now, I'll bake your favorite cake for dessert." How many times can this be done?

An Experiment in Contingency Management

In one of our experimental projects at Draper, we are conducting a study in contingency management. Since we were interested in making a detailed behavioral analysis, we initially chose only two subjects. They were very low producers in basic education courses. The first step we took was to negotiate a "Contract of Performance" with them, which required, for the first week, 25% more frames of programmed instruction than they had previously produced. Each subsequent week, 25% more was required than was produced the previous week. This weekly contract was broken down into daily units. When each daily unit was completed, the subject was allowed to choose his own reinforcement, which we called a "reinforcing event." The event was permitted to be enjoyed for a limited time interval. The subject himself made up the list of things he enjoyed doing. This list was called a "Reinforcing Event Menu." Examples of items on the menu are as follows: a ten-minute coffee break, looking out the window for ten minutes, a 15-minute counseling session, or an appointment with the Warden. For several weeks the contingency

manager worked out the daily performance contract with the subjects; later, it was discovered the subjects could arrange terms of their own contract--and quite fairly.

Now, for the results (refer to Exhibits C & D). It can be seen from the first graph that the subjects had an initial baseline of 1270 frames per week of programmed materials. After four weeks, under contract, the subjects had completed nearly twice as many frames (2227) in half the time. The percentage of tests passed and failed (85% necessary to pass) by the subjects showed no marked change under contingency management, however, they took more tests.

A particular value of the written performance contract--at least for the offender--is that expectancies are spelled out in behavioral terms and agreed to by him. Seldom are expectancies so clearly expressed; more usually, they are urged upon him through very general expressions, such as "straighten up and fly right," or "keep your nose clean and stay out of trouble."

One possible application of contingency management in the basic education class itself would be that of requiring the learner to tackle the most difficult or least liked subject first, to be followed immediately by his working on his most liked subject. According to another theoretical principles of contingency management,[1] the latter task will, because of its positive reinforcing value, actually make more palatable the performance of the first task.

Conclusion

In this paper I have briefly discussed several procedures for increasing the basic educational level of disadvantaged learners. I have particularly stressed

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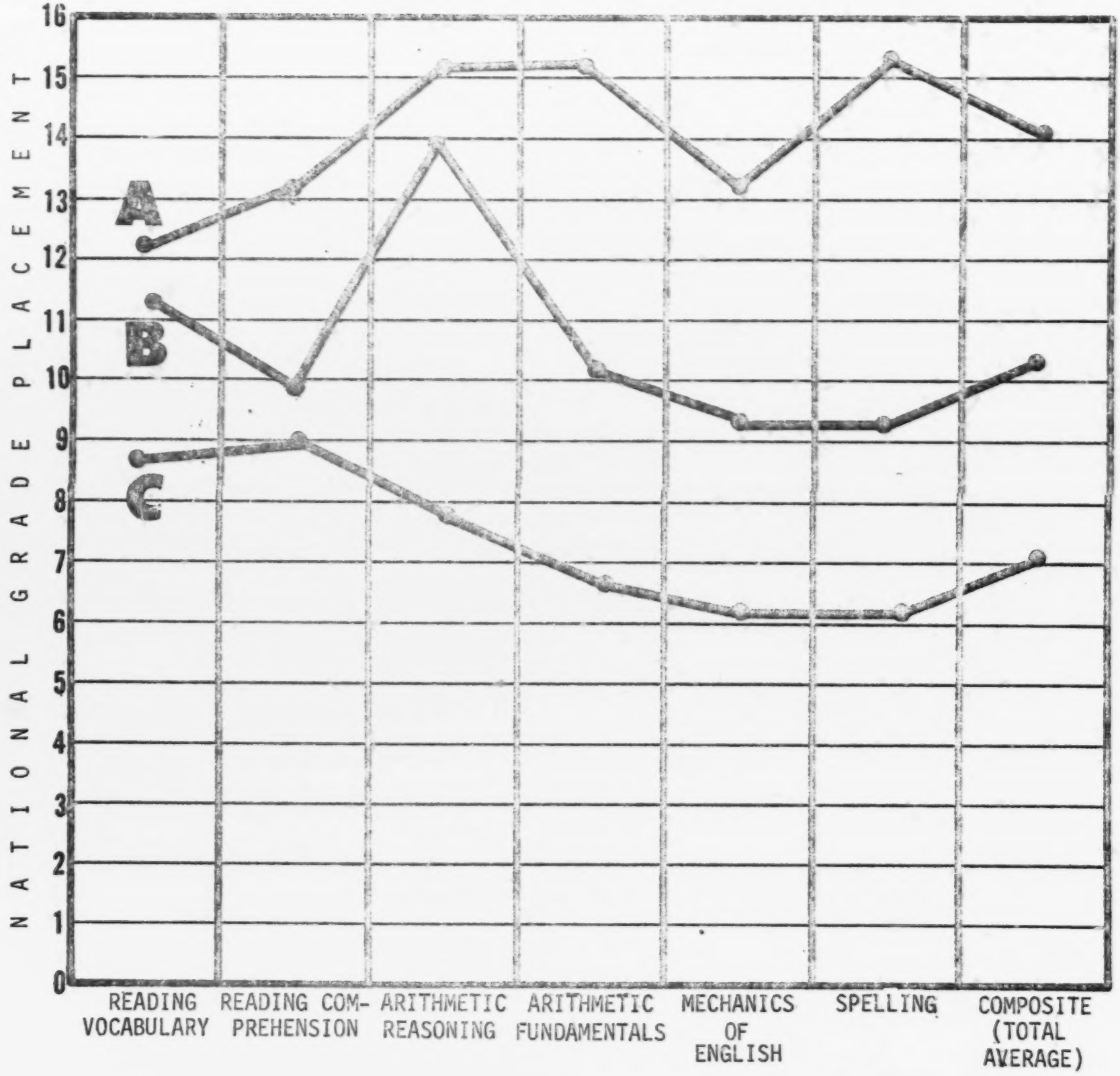
[1]Homme, L. E.; C. deBaca, P.; Devine, J. V.; Steinhorst, R.; & Rickert, E. J. "Use of the Premack Principle in Controlling the Behavior of Nursery School Children." Journal of the Experimental Analysis of Behavior, 1963, 6, 544.

the motivational value inherent in the process of individualizing instruction, such as tailoring a course of study to compensate for specific knowledge-skill deficiencies, and providing a feedback system of progress. However, I wish to reinforce one point above all others. The old adage, "Nothing succeeds like success," says it most simply. This is a commonsense reinforcement theory. And, today, modern educational technology provides us with the know-how to insure success in learning for virtually everybody. It is a wonderful time to be an educator!

EXHIBIT A

THREE TEST PROFILES

CALIFORNIA ACHIEVEMENT TEST



FLOW CHART FOR THE USE OF THE FRACTIONS LABORATORY

EXHIBIT B

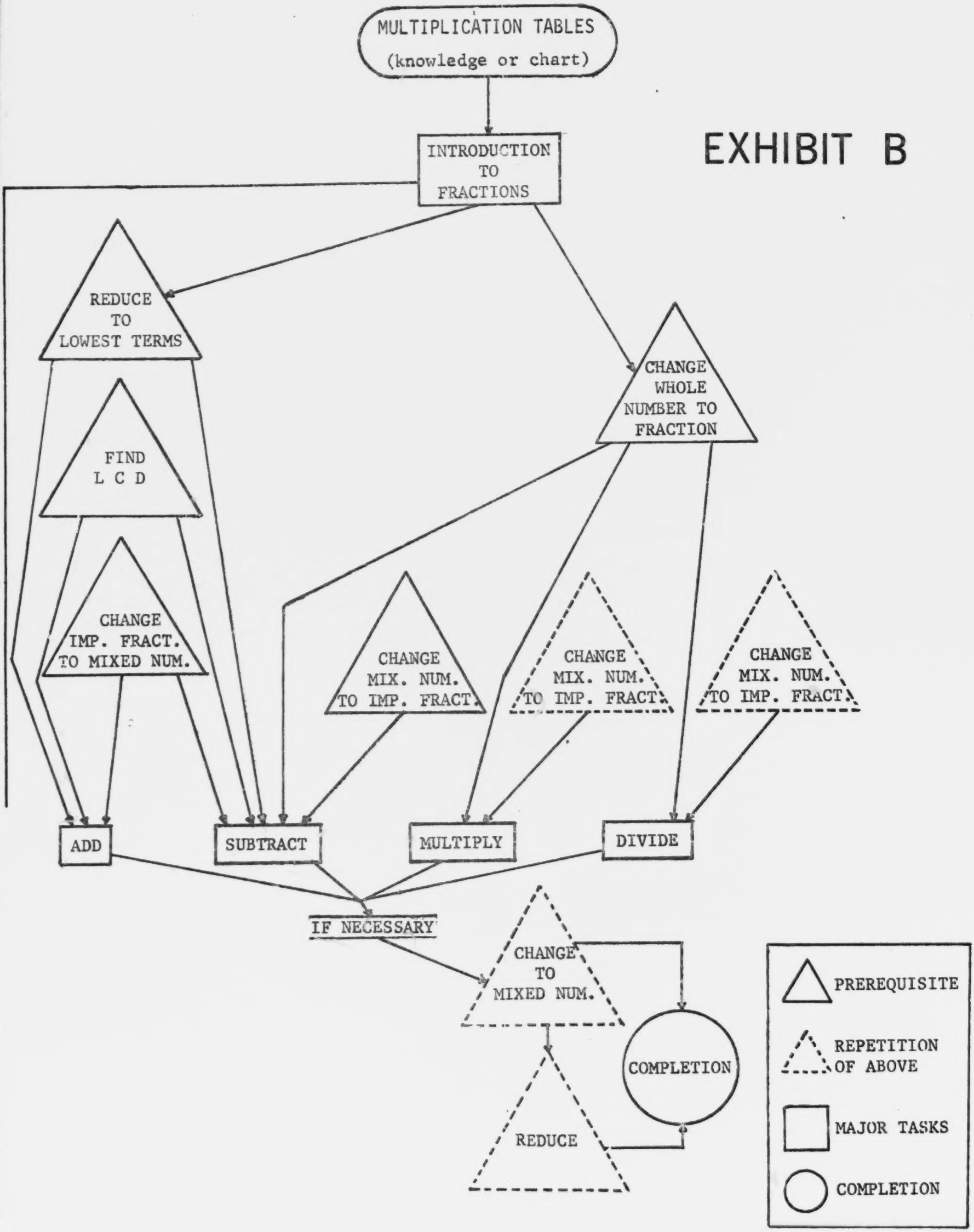
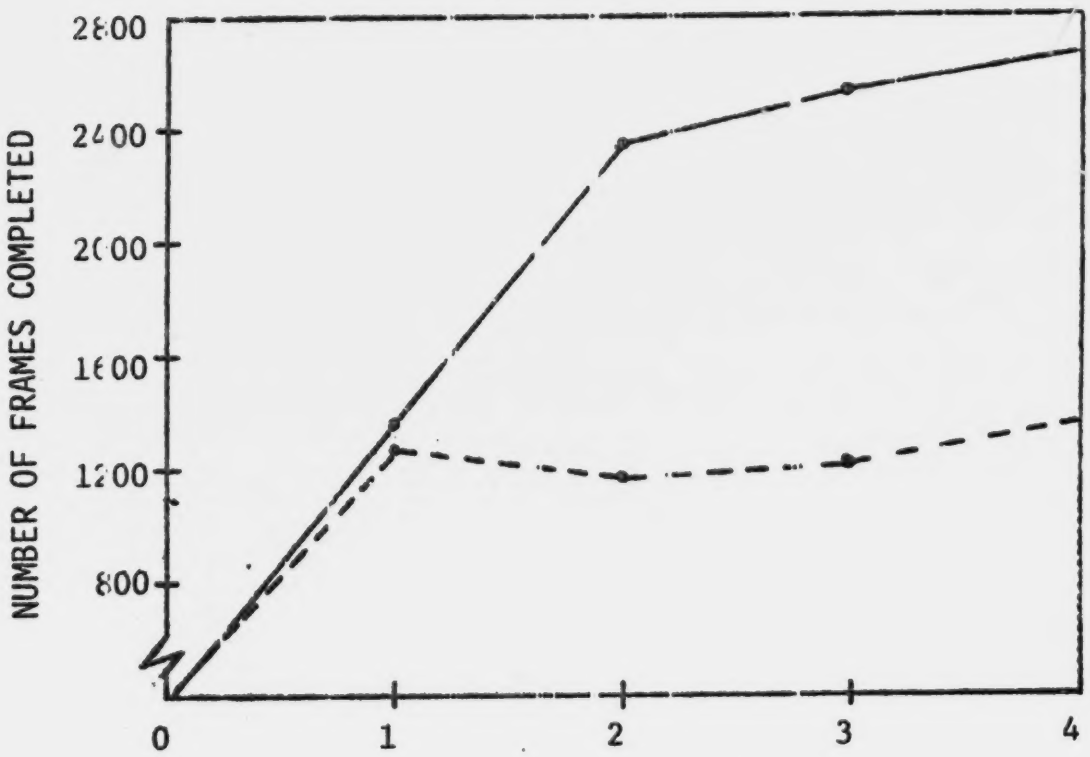
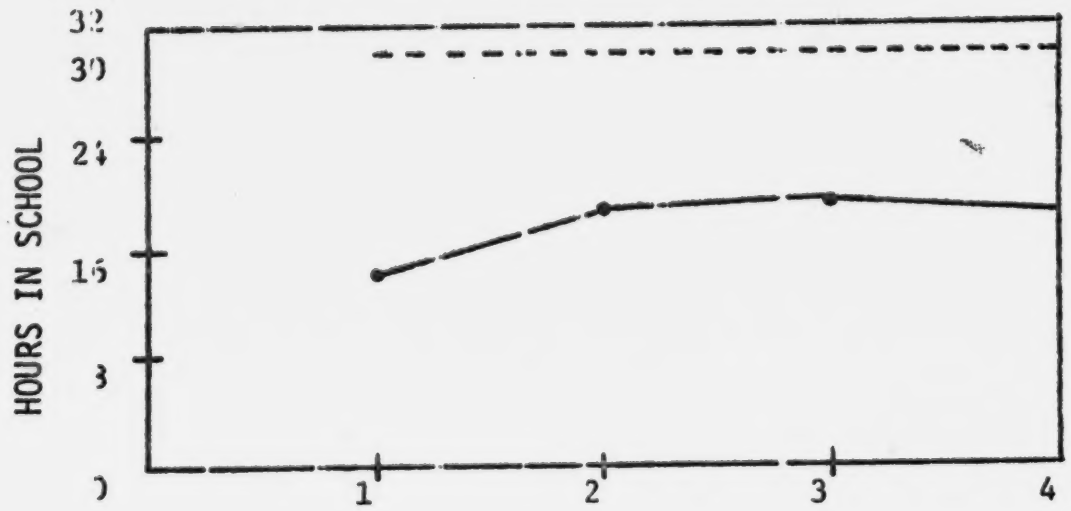


EXHIBIT C

COMPARISON OF PERFORMANCE DURING BASELINE AND CONTINGENCY MANAGEMENT PERIODS



COMPARISON BETWEEN HOURS IN SCHOOL, CONTINGENCY MANAGEMENT AND BASELINE PERIODS



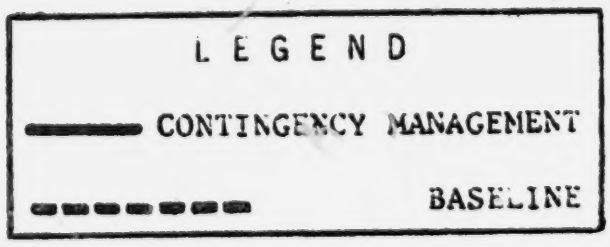
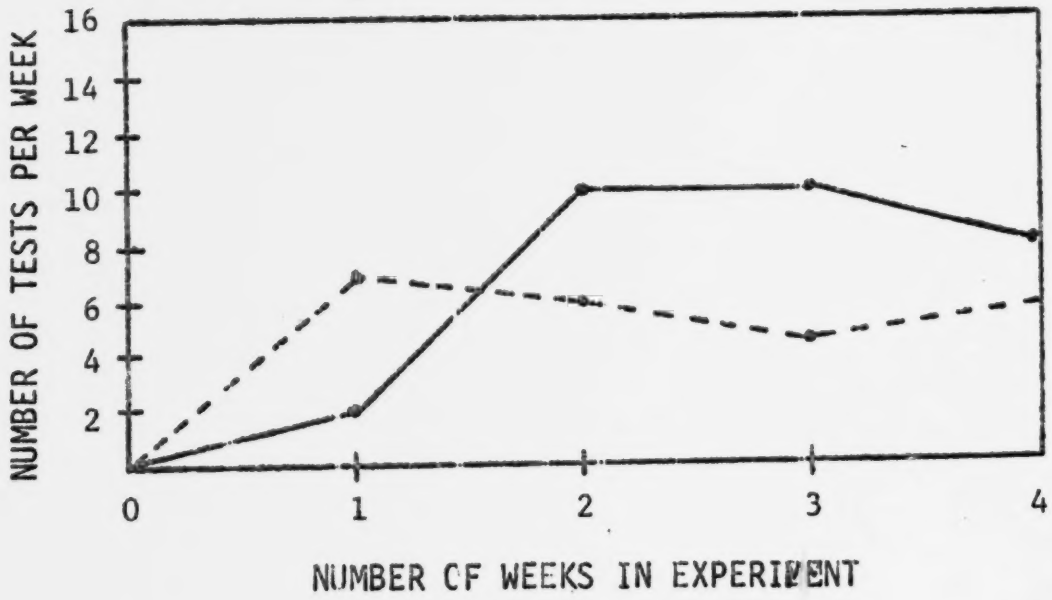
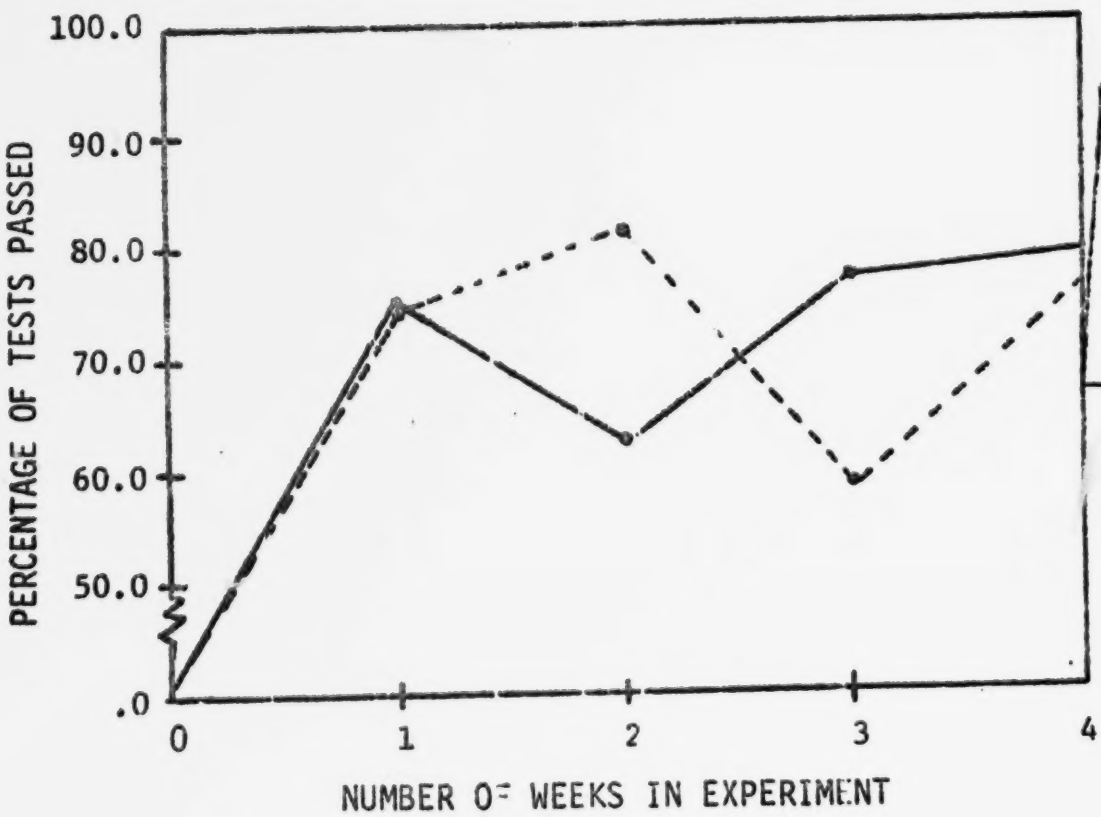


EXHIBIT D

COMPARISON BETWEEN BASELINE AND CONTINGENCY MANAGEMENT
AVERAGE NUMBER OF TESTS TAKEN PER WEEK



COMPARISON BETWEEN BASELINE AND CONTINGENCY MANAGEMENT ON PERCENTAGE OF TESTS PASSED



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CONTINGENCY MANAGEMENT

BASELINE